Witch Hazel Leaf and Bark

Back

Latin Name *Hamamelis virginiana*
Pharmacopeial Name Hamamelidis folium et cortex, Hamamelidis folium, witch hazel leaf; Hamamelidis cortex, witch hazel bark
Other Names Hamamelis

Overview

Witch hazel is a deciduous shrub or small tree that flowers in the fall, native to damp woods in eastern North America from New Brunswick and Quebec to Minnesota, south to Florida, Georgia, Louisiana, and Texas (HPUS, 1992; Leung and Foster, 1996; Wichtl and Bisset, 1994). It is cultivated on a small scale in Europe (Wichtl and Bisset, 1994), though the material of commerce is obtained mainly from the eastern United States and Canada (BHP, 1996; Wichtl and Bisset, 1994).

Witch hazel preparations have a long history of traditional use in North America (Der Marderosian, 1999; Duke, 1985). The aqueous infusion of the bark was used in aboriginal medicine to treat hemorrhages, inflammations, and hemorrhoids (Millspaugh, 1974). The decoction was used in poultices for painful swellings and tumors (Grieve, 1979). These traditional uses were later adopted by nineteenth century American Eclectic physicians and the aqueous decoction form became an official preparation in the Eclectic Materia Medica. The alcoholic fluidextract form became official in the *United States Pharmacopoeia* in 1882 (Millspaugh, 1974). Today, the external use of witch hazel is well known for the astringency associated with the tannin content of its leaves and bark. In Europe, tannin-rich witch hazel extracts made from the leaf and bark are used. In the United States, the FDA has approved as an over-the-counter drug a witch hazel water, made from the steam distillate of the twigs, this preparation having virtually no tannin content. However, the product contains about 14–15% alcohol in water with a small amount of the essential oil of witch hazel. Thus, whatever astringent properties may be attributed to this type of preparation are probably due to the alcohol content, not any tannins from the herb (Tyler, 1994). However, there are reports of the distillate containing 2.5–4.2 mg/liter hamamelitannins (Zeylstra, 1998).

In a recent clinical study, a witch hazel preparation demonstrated anti-inflammatory activity on skin irritations caused by ultraviolet light. The preparation, an after-sun lotion (Eucerin®), contained a lotion base and 10% witch hazel distillate. The witch hazel lotion helped reduce inflammation by 20% after 7 hours and 27% after 48 hours compared to 11–15% for other lotions (Hughes-Formella et al., 1998). In another double-blind randomized clinical study comparing a witch hazel distillate (5.35% with 0.64 mg ketone) in a cream base to both the herb-free cream base and a 0.5% hydrocortisone cream in patients with severe ectopic eczema, the witch hazel cream was not as effective as the hydrocortisone preparation, despite what the authors confirm as the "mild, yet unmistakable anti-inflammatory effect of

hamamelis cream in experimental models of inflammatory skin disease" (Korting et al., 1995). Some of these same authors had conducted an earlier randomized controlled trial comparing a witch hazel distillate (0.64 mg/2.56 mg hamamelis ketone in 100 g) with phosphatidylcholine; these were compared to a chamomile cream and a 1% hydrocortisone cream and four base preparations. The results showed an anti-inflammatory action of the hamamelis distillate on experimentally induced skin erythemas, but the hydrocortisone cream was deemed more potent, even when the herb distillate was increased by four times (Korting et al., 1993).

In Germany, witch hazel is listed in the *Drug Codex,* approved in the Commission E monographs, and the tea infusion form is official in the Standard License monographs (BAnz, 1998; Braun et al., 1997; DAC, 1986; Wichtl and Bisset, 1994). Witch hazel leaf and bark are used in some hemorrhoid teas and antiphlebitis (vein inflammation) drugs. Several witch hazel mono-preparations and combination products (e.g., with horse chestnut) are available in various dosage forms, including ointments, suppositories, coated tablets, and tinctures (Wichtl and Bisset, 1994). The mother tincture (1:10) and liquid dilutions thereof, are also official in the *German Homeopathic Pharmacopoeia* (GHP), prepared from different plant parts including the fresh leaves, the fresh bark from roots and branches, as well as a mixture of bark from the branches with tips of the shoots. The GHP also includes a monograph for an ethanolic decoction of the dried bark from stems and branches, specifying bark which contains not less than 2.5% tannins, precipitable with hide powder, calculated as pyrogallol (GHP, 1993). In the United States, witch hazel distillate, from partially dried twigs, is official in the currently valid USP (USP 24–NF 19, 1999). An alcoholic tincture (1:10 w/v, in 55% alcohol v/v) of the bark, including the root bark, is also classified in the *Homeopathic Pharmacopoeia of the United States* as an OTC Class C drug (HPUS, 1992). Witch hazel is used in several over-the-counter astringent and hemostatic preparations such as Dickinson's® witch hazel astringent cleaner towelettes with *Aloe,* Parke-Davis Tucks® hemorrhoidal pads, Preparation H® hemorrhoidal cooling gel, and Thayers® witch hazel astringent with *Aloe vera.*

European pharmacopeial grade witch hazel *leaf* consists of the dried leaves of *Hamamelis virginiana* L. containing not less than 7.0% tannins calculated with reference to the dried leaf. It may contain no more than 7% stem pieces and maximum 2% other foreign matter. Botanical identity must be confirmed by thin-layer chromatography (TLC) as well as macroscopic and microscopic examinations (Ph.Eur.3, 1997). Both the *British Herbal Pharmacopoeia* and ESCOP monographs require the leaf to conform with the requirements of the *European Pharmacopoeia* (BHP, 1996; ESCOP, 1997). The German Standard License requires that the leaf conform with the quality requirements of the *German Drug Codex* monograph (Braun et al., 1997). The *German Drug Codex* requires not less than 5.0% tannins, precipitable with hide powder (DAC, 1986, Wichtl and Bisset, 1994).

Pharmacopeial grade witch hazel *bark* consists of the dried bark from stems and branches of *H. virginiana* L. collected in the spring. The bark must contain not less than 20% ethanol (45%)-soluble extractive. Botanical identity must be confirmed by TLC as well as by macroscopic and microscopic examinations (BHP, 1996). The *German Drug Codex* requires not less than 9.0% tannins, precipitable with hide powder (DAC, 1986; Wichtl and Bisset, 1994). Witch Hazel USP is the clear, colorless distillate prepared from freshly cut and partially dried dormant twigs of *H. virginiana* L. It is prepared by macerating the twigs in water for 24 hours, then distilling it down until 800–850 mL of distillate is yielded from each 1,000 g of twigs, then adding 150 mL of alcohol to each 850 mL of distillate. It has a tannins limit of 0.03 mg tannic acid per mL, a pH between 3.0 and 5.0, and alcohol content of 14.0–15.0% (USP 24–NF 19, 1999).

Description

Witch hazel leaf consists of the dried leaf of *H. virginiana* L. [Fam. Hamamelidaceae], as well as its preparations in effective dosage. The leaf contains 3–8% tannin, mainly gallotannins. Other ingredients are flavonoids and essential oil.

Witch hazel bark consists of the dried bark of the trunk and branches of *H. virginiana* L., as well as its preparations in effective dosage. The bark contains at least 4% tannins. Characteristic ingredients of **witch hazel** bark are β-hamamelitannin and γ-hamamelitannin, the depside ellagitannin, catechin derivatives, and free gallic acid.

Fresh leaf and twigs of *H. virginiana* L. consist of leaves and twigs collected in spring and early summer for the production of water distillates.

Chemistry and Pharmacology

Witch hazel leaf contains 3–10% tannins (a mixture of catechins, gallotannins, plus cyanidin and delphinidin type proanthocyanidins), mainly hamamelitannin and hamamelose (Budavari, 1996; Meyer-Buchtela, 1999; Wichtl, 1989); catechins, mainly (+)-catechin, (+)-**gallocatechin**, (–)-**epicatechin** gallate, (–)-**epigallocatechin** gallate; phenolic acids (caffeic and gallic acids); flavonoids such as kaempferol, quercetin, quercitrin, and isoquercitrin (ESCOP, 1997; Hänsel et al., 1993); 0.01–0.5% volatile oil (Meyer-Buchtela, 1999; Wichtl, 1989), of which 40% are aliphatic alcohols, 25% are carbonyl compounds (n-hex-2-en-1-al, acetaldehyde, α- and β-ionone), 15% are aliphatic esters, and not more than 0.2% safrole (Wichtl and Bisset, 1994; Zeylstra, 1998).

Witch hazel bark contains 8–12% tannins, composed mainly of hamamelitannins (1–7%), followed by monogalloylhamamelose, free gallic acid, condensed catechin tannins, and small amounts of oligomeric proanthocyanidins; a small amount of flavonols; approximately 0.1% volatile oil with a very complex composition (Hänsel et al., 1993; Meyer-Buchtela, 1999; Wichtl, 1996).

The Commission E reported astringent, anti-inflammatory, and locally hemostatic activities.

The *British Herbal Pharmacopoeia* reported astringent action for **witch hazel** bark (BHP, 1996). *The Merck Index* reported its therapeutic category as astringent (Budavari, 1996). **Witch hazel** leaf fluidextract is vasoconstrictive in the rabbit (Bruneton, 1995). In a pharmacological study in humans a topical application of **witch hazel** leaf hydroglycolic **extract** significantly reduced skin temperature, which was interpreted as vasoconstrictive action (Diemunsch and Mathis, 1987; ESCOP, 1997). Astringent, antiseptic, and hemostatic properties of **witch hazel** leaf and bark infusions, ointments, and suppositories have been demonstrated in animal experiments (Wichtl and Bisset, 1994).

Uses

The Commission E approved the use of **witch hazel** preparations for minor skin injuries, local inflammation of skin and mucous membranes, hemorrhoids, and for varicose veins.

Witch hazel is used as an active compound in topical ointments and suppositories for the treatment of hemorrhoids (Anon., 1991; Reynolds, 1989). The German Standard License for **witch hazel** leaf and/or bark tea infusion, for oral ingestion or as a mouthwash, approves its use as supportive therapy for acute, non-specific diarrhea, and also to treat inflammation of the gums and mucous membranes of the mouth

(Braun et al., 1997). ESCOP indicates the internal use of witch hazel leaf infusion and/or fluidextract for symptomatic treatment of conditions related to varicose veins (painful and heavy legs, and for hemorrhoids) and the external use of the decoction and/or semisolid extract for bruises, sprains, and minor injuries of the skin, local inflammations of the skin, and mucosa, hemorrhoids, and relief of neurodermatitis atopic symptoms (ESCOP, 1997). In France, witch hazel extracts and tinctures are approved for oral and topical application to treat subjective symptoms of venous insufficiency and hemorrhoids. Local application is also allowed for relief of eye irritation and for oral hygiene (Bruneton, 1995).

Contraindications

None known.

Side Effects

None known.

Use During Pregnancy and Lactation

No restrictions known (McGuffin et al., 1997).

Interactions with Other Drugs

None known.

Dosage and Administration

Unless otherwise prescribed: Cut leaves and/or bark or extracts for internal and external use, or steam distillate of fresh leaves and bark for internal and external use, as follows:

Internal (mucous membranes):

Suppositories (vaginal and rectal): The amount of a preparation corresponding to 0.1–1 g drug (decoction), one to three times daily (Commission E); or, a semi-solid cylinder or cone containing 200 mg witch hazel leaf dry alcoholic extract with cocoa butter or other comparable fatty oils, one to two times daily (BPC, 1973; ESCOP, 1997; Reynolds, 1989; Zeylstra, 1998); or prepared from the concentrated infusion in a base of powdered gelatin or cocoa butter and glycerin (Cowper, 1996).

Internal (oral):

Infusion: Steep 2–3 g leaf or bark in 150 ml boiled water for 10 to 15 minutes. Drink two to three times daily between meals (Braun et al., 1997; Hänsel et al., 1993; Meyer-Buchtela, 1999; Zeylstra, 1998).

Fluidextract, 1:1 (g/ml), 45% ethanol: 2–4 ml, three times daily (BHP, 1983; BPC, 1973; ESCOP, 1997).

Tincture, 1:5 (g/ml), 25% ethanol: 2–4 ml, three times daily (BPC, 1934; Karnick, 1994; Zeylstra, 1998).

External:

Aqueous steam distillate (witch hazel water with preservative): For local application as needed, undiluted or diluted 1:3 with water, several times daily (Commission E).

Aromatic hydrosol (without preservative): For local application as needed, several times daily. Hydrosols may be more suitable than distillates for sensitive skin (Blackwell, 1998).

Compress: Semi-solid or fluid preparations containing 5–10% decoction or distillate are spread or soaked on linen. Fold and apply firmly to affected area.

> [Note: Hemorrhoidal pads are commercially available which can be folded and used as a compress on inflamed tissue].

Decoction (bark): For use as a component of compresses, place 2–3 g fine-cut or coursely powdered bark in 150 ml cold water, bring to a boil and simmer for 10 to 15 minutes (Meyer-Buchtela, 1999; Wichtl and Bisset, 1994).

Decoction (leaf): For use as a component of compresses and irrigations, boil 5–10 g in 250 ml water for 10 to 15 minutes (Commission E; ESCOP, 1997; Hänsel et al., 1993; Meyer-Buchtela, 1999).

Fluidextract 1:1 (g/ml), 45% alcohol: For use as a component of ointment, gel, or salve (Reynolds, 1989).

Gargle or mouth wash: Use the warm decoction or infusion several times daily (Braun et al., 1997).

Ointment, gel, or salve: Semi-solid preparation containing 10% decoction or fluidextract, in a base of vaseline or wool fat (anhydrous lanolin) and yellow soft paraffin, applied locally (BPC, 1973; Cowper, 1996; ESCOP, 1997; Reynolds, 1989; Zeylstra, 1998).

Poultice: Semi-solid paste containing 20–30% aqueous steam distillate or decoction, applied locally (Commission E).

Tincture 1:5 (g/ml): For use as a component of ointment, gel, or salve.

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Note

This material was adapted from The Complete German Commission E Monographs-Therapeutic Guide to Herbal Medicines. M. Blumenthal, W.R. Busse, A. Goldberg, J. Gruenwald, T. Hall, C.W. Riggins, R.S. Rister (eds.) S. Klein and R.S. Rister (trans.). 1998. Austin: American Botanical Council; Boston: Integrative Medicine Communications.
1) The Overview section is new information.
2) Description, Chemistry and Pharmacology, Uses, Contraindications, Side Effects, Interactions with Other Drugs, and Dosage sections have been drawn from the original work. Additional information has been added in some or all of these sections, as noted with references.
3) The dosage for equivalent preparations (tea infusion, fluidextract, and tincture) have been provided based on the following example:
Unless otherwise prescribed: 2 g per day of [powdered, crushed, cut or whole] [plant part]
Infusion: 2 g in 150 ml of water
Fluidextract 1:1 (g/ml): 2 ml
Tincture 1:5 (g/ml): 10 ml
4) The References and Additional Resources sections are new sections. Additional Resources are not cited in the monograph but are included for research purposes.

Alban Muller international

Witch Hazel

*Hamamelis virginiana L*Hamamelis virginiana L.

INCI name:	**Witch hazel (Hamamelis virginiana) Extract**
CAS number:	**84696-19-5**
EINECS number:	**283-637-9**

Description:

Very common in North America, **witch hazel** grows in the damp forests from Mississippi all the way to Canada. It was introduced in Europe in 1736 as an ornamental and medicinal species. It is exclusively grown in botanical gardens, the only place it has acclimatized.

3 to 6 m high, this small tree owes its name to the fact it resembles a **hazel** tree. It bears alternate, entire, oval and irregularly crenate leaves. The flowers appear late in Autumn. They are small, russet outside and yellow inside. The fruit is a capsule the shape of which looks like the **hazel** nut we know and contains two black and shiny seeds.

The leaves and the bark are used for their astringent and vasoconstricting properties that have been renowned for a long time. **Witch hazel** is an excellent medicine for veins and thus earned the name of «venous digitalin». Due to its sedative properties, Amerindians have used it for centuries against painful tumours and external inflammations. Black slaves used it to stop haemorrhages caused by abortions.

Composition:

The bark of **witch hazel** contains :

- phenolic compounds consisted in :

. phenolic acids, chiefly gallic acid

. flavonoids belonging to the proanthocyanidins (d-**gallocatechin**, L-epicatechinegallate, L-**epigallocatechin**) and flavanols (catechin,

epicatechin, **gallocatechin**)

. tannins, notably 1 to 7 % hamamelitannin

- terpenoids : triterpenes, particularly saponins

- 0.5 % essential oil containing :

. phenolic compounds, particularly phenols notably eugenol

. terpenoids : sesquiterpenes

- resins

- waxes

Witch hazel extracts (bark and leaves) have anti-inflammatory, antipruritic, antibacterial and haemostatic properties.

Witch hazel is moreover an excellent vasoconstrictor and has a protective effect on the venous system : these properties are thought to be due to the condensed tannins included in the leaves and bark. Rich in flavonoids, the plant also efficiently stimulates microcirculation.

USES

a) Pharmaceutical

Witch hazel extracts are often used in astringent and haemostatic preparations (suppositories, creams, lotions, plasters and so on...).

The plant is also recommended for its protective activity on the venous system, in cases of menopause, varix, heavy legs, phlebitis and haemorrhoids.

Witch hazel traditionally relieves eye irritation or disorders due to various causes (smoky atmosphere, sustained attention, baths in swimming pools or in the sea).

Folk medicine recommends **witch hazel** in mouthwashes.

b) Cosmetic

Witch hazel is renowned for its soothing and regenerative virtues. It is used in face care products for sensitive skin, for around the eyes and for after-shave lotions.

It is also interesting for its anti-blotch activity and to relieve heavy legs.

Witch hazel presents astringent and antiseptic properties so that it can be used on greasy and combination skin suffering from acne, it is also of help to take care of greasy and normal hair.

Witch hazel can be an ingredient in most cosmetic products.

Cosmetic usage level : 2 - 5 % (extracts)

Tradition:

Its botanical name comes from the Greek «hamamêlis», from «hama», together, all at once, and «melon», apple, **witch hazel** bearing fruit and flowers at the same time.

It symbolizes protection and chastity.

Its late flowering time and its fruit rather violently bursting to eject the seeds led the Amerindians to believe the plant was bewitched.

Indian sorcerers used it a long time before the English settlers reached their coasts ; they allotted this shrub all sorts of magic virtues.

The first people to settle in the American provinces learnt to know it and soon appreciated it. All through the 18 th century, American women carved their divining rods out of a branch of **witch hazel**.

Its bark protects against evil influences.

Wearing **witch hazel** leaves makes it easier to soothe an unhappy love life. In infusion, they cool the most exacting passions.